

# Literature Review on Development and Validation of Quality of Life Tool among Chemotherapy Patients

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## ABSTRACT

**Introduction:** Cancer is the second commonest explanation for death subsequent to heart diseases and it represented 8.8 million deaths worldwide during 2015. Quality of Life (QOL) is all about personal satisfaction, degree or the standard to which an individual, gathering of individuals or community people can appreciate the significant inclination and experience of life like physically, mentally, socially, etc.

**Aim:** To identify the existing tools or instrument for QOL among chemotherapy patients.

**Materials and Methods:** A systematic review of literature for QOL tool among chemotherapy patients was conducted. Electronic databases were looked: Pubmed, proquest, PsycINFC Scopus, Cumulative Index to Nursing and Allied Health Literature (CINHAL).

**Results:** Researcher found 673 research papers from electronic data base: from that 353 articles were excluded bases on exclusion criteria. So total retrieved articles were 320 among all 51 duplicate articles, 88 No full text available, 58 not relevant and 47 abstracts were excluded. Final retrieved articles were 76; among them 38 full articles were excluded based on inclusion criteria. Finally, according to 38 studies, out of 14 investigations utilised European Organisation for the Research and Treatment

of Cancer (EORTC QOL-C 30) survey, four studies used the Health Related Quality Of Life (HRQOL) tool, four studies used World Health Organisation Quality of Life-BREF (WHOQOL-BREF) is a self-report questionnaire which assesses 4 domains of quality of life (QOL): physical health, psychological health, social relationships, and environment, Twelve studies used self administered questionnaire, four studies used other method like face to face validity, Functional Assessment of Cancer Therapy (FACT) etc. The most-normally utilised instrument was a QOL tool for use in universal clinical preliminaries in oncology having a place with EORTC QOL C-30 survey, HRQOL tool and WHO BREF tool.

**Conclusion:** In this review study variety of instruments has been used by the researcher that explores the QOL of chemotherapy patients. The significance of psychometric properties of the instruments and its effect on discoveries rising up out of various examinations, it appears to be fundamental that more thought be paid to the validity and reliability of tool before conducting the research studies. Literature suggested that the analysts contribute enough consideration regarding the choice of standard instruments and organise the instruments' validity and reliability of their outlook explores. Finding of study suggested that tools along with ideal psychometrics properties which were good with the socio-cultural setting of particular country.

**Keywords:** Cancer, Health related quality of life, Psychometric evaluation

## INTRODUCTION

Cancer in medical term is called malignant neoplasm. The word neoplasm springs from Greek word 'neon' means new and 'plasia' referred to as moulding that's a category of diseases during which a lot of cells show uncontrolled development or division beyond the traditional limits invasion, intrusion and decimation of contiguous tissues. Cancer is a global public health concern [1]. As indicated by the WHO, cancer is that the second driving clarification for death all inclusive, and is answerable for a normal 9.6 million going in 2018. Globally, around 1 out of 6 passing is by virtue of cancer. Around 70% of going from cancer occur in low-and focus pay countries. QOL cares with "the degree to which an individual enjoys the important possibilities of life". HRQOL describes an individual's view of how wellbeing impacts a person's life quality and overall wellbeing [2]. Chemotherapy is the specific treatment of cancer, where the specific anti-neoplastic agents are used. It has a key role in the treatment of cancer. [3] These agents interfere with the cellular function, including replication. It may be single or combined with surgery and radiation therapy. Rehashed portion of chemotherapy are vital over a drawn out period [4].

Cancer may influence people at all ages, but the risk for most varieties increases with age. Cancer treatment should be conceivable in four fundamental manners; Through local treatment of medical procedure and radiotherapy, or through systemic treatment by utilising biological agents (for instance hormones, antibodies and

growth factors) and chemotherapy [5]. There are numerous standard tools are existing which measures the QOL among chemotherapy patient like HRQOL, EORTC QOL-C 30, FACT-General, Short Form 36 (SF-36), Visual Analogue Scale-Cancer (VAS-C), Profile of Mood States (POMS), Rotterdam Symptom Checklist (RSCL).

## Objective(s)

The target of this survey was to analyse the writing and present the best accessible proof identified with QOL instruments, which can be utilised to evaluate adult patients with malignancy on chemotherapy for use in hospital setting. This study was about how QOL among chemotherapy patients are affected by various factors like physically, mentally, socially etc. There study is few will brief, global instruments available that specifically measures the QOL among chemotherapy patients. There was very less literature review study found in India on QOL among chemotherapy patient. This study highlights a number of issues from QOL literature which need to resolve.

## Background of Study

The utilisation of chemotherapeutic specialists for treatment of cancer has prolonged commonly with multiple potent agents being administered at higher but more tolerable doses. Most of those patients get a few patterns of chemotherapy over a time of months, prompting a toxic physiologic, mental and condition that causes antagonistic impacts. These unfriendly impacts can prompt a critical

effect on the patients' QOL. In the year, 2019, 1,762,450 new cancer cases and 606,880 deaths were foreseen. An expected 8,01,374 individuals kicked the bucket of cancer this year when contrasted with 7,66,348 passing from the sickness in 2017, Minister of State for Health, Anupriya Patel told the Lok Sabha.

In reference to accessible data through Indian Council of Medical Research's (ICMR) there are an expected 15,86,571 cases of cancer have just diagnosed. It had been brought up in conversation that evaluated occurrence of cancer patient in 2017 was 15,17,426; 14,51,417 in 2016 and 13,88,397 of every 2015, which show increment in number of disease cases each year. It is a caution signal for Health Ministry of India. According to a reported writing, the mortality of cancer cases in India was 73, 2921 in 2016.

### Cancer Numbers in India

1. Every eight second one woman dies from cervical cancer in India.
2. Each day two female diagnosed with breast cancer, one female dies of it.
3. Every day approximately 3500 people die from oral cancer because of tobacco use.
4. Tobacco (smoked and smokeless) use represented 3,17,928 death (approx) in people in 2018.
5. Consistently, new cancer patients enrolled: Over 11,57,294 lac.
6. Risk of making cancer before the age of 75 years
  1. Male: 9.81%
  2. Female: 9.42%
7. Death because of malignancy in 2018 (Total: 7,84,821)
  1. Men: 4,13,519
  2. Women: 3,71,302
8. Risk of death from cancer before the age of 75 years is 7.34% in male and 6.28% in female [6].

### DESIGN (Article included from the year 2001 to 2018)

The literature review was designed as a narrative study, because a broader perception of chemotherapy patients is different in various conditions. The articles were included from various countries. A systematic electronic search was used to identify number of studies carried out on development and validation of QOL tool among chemotherapy patients. The original research papers were only included in the study. The following electronic databases are searched: ProQuest, Embase, Pubmed, Psyc ARTICLES, EBSCO, research gate, EORTC, Scopus, Educational Resources Information Center (ERIC), and Allied Health Literature (CINHAL). A predefined hypothesis should determine the instrument to be used. Since the selection of a QOL instrument in a specific study influences both the results and the conclusions, it is essential to carefully select the instrument that have the greatest possibility of identifying relevant tools to assess quality of life among chemotherapy patient.

#### Inclusion criteria:

1. The research paper only which directly belongs to QOL tool among chemotherapy patient.
2. The paper which is easily accessible online and full text available.
3. The study concern chemotherapy patient age above 30 years.
4. The studies which are completed in English language.
5. Articles included from the year 2001 to 2018.

#### Exclusion criteria:

1. The study concern to cancer patient receiving chemotherapy along with radiation and other adjuvant therapy.
2. The investigations which are copy and result are questionable.
3. The research study which is published in without ISSN number journals.

4. The research studies which are not available on journal database.
5. The research studies in which only abstract is available.
6. The articles without the term "Quality of life" in their studied instruments were excluded as well.
7. The studies which is published in local language.

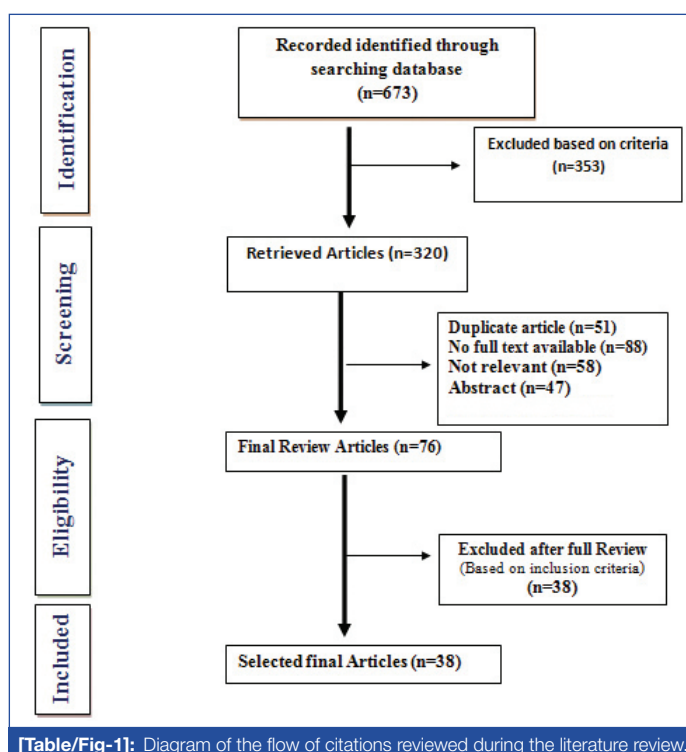
### Search Strategy

#### MeSH terminology used for PubMed and ERIC

("quality of life" {MeSH Terms} OR ("quality" {All Fields} AND "life" {All Fields}) OR "quality of life" {All Fields}) AND ("tool" {MeSH Terms} OR "Chemotherapy" {All Fields}) AND ("Patient" {MeSH Terms}).

### RESULTS

A total 673 articles were received from search engines, from that 353 articles were excluded based on exclusion criteria. So total retrieved articles were 320 among all 51 duplicate articles, 88 No full text available, 58 not relevant and 47 abstracts were excluded. Final retrieved articles were 76; among them 38 full articles were excluded based on inclusion criteria. Finally, 38 articles were included in the review [Table/Fig-1]. The summary of all the articles is shown in [Table/Fig-2] [7-44].



[Table/Fig-1]: Diagram of the flow of citations reviewed during the literature review.

QOL can be surveyed by standardised tool which included general prosperity, physical prosperity, psychological well-being, familial relationship social/economic well-being, spiritual well-being. QOL standardised tool survey capacity, disability and trouble coming about because of general sick wellbeing and have the upsides of permitting correlations with healthy population.

### DISCUSSION

Numerous QOL assessment tools and questionnaires have come into use over the past 15 years and there is at present modest need for the development of additional questionnaires in cancer chemotherapy, although new treatment modalities may need new additional modules. However, a number of methodological issues remain to be resolved, and it is still difficult to make proper conclusions from QOL measurements tool in chemotherapy patient. At the present time, validity and reliability of instruments are unavoidable thoughts that are required to be in a satisfactory condition [45].

Sl. No./ Ref No.	Study title	Author Name and Country	Year	Sample	Study type	Methods	Findings
1/[7]	The CA patient and QOL.	Bottomley A, Belgium	2002	A systematic review study	Quantitative study	EORTC QLQ-C30	Expanding quantities of concentrates with personal satisfaction result appraisal as either an optional or an essential end point are showing up. It is turning out to be evident that HRQOL data may, in certain settings, cause upgrades inside the status of the individual malignant growth persistent [7].
2/[8]	Choosing b/w the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ)-C30 and FACT-G for measuring HRQOL in cancer clinical research.	Luckett T et al., Australia	2011	A systematic review study	A systematic review study	Psychometric properties of the QLQ-C30 and FACT-G.	Psychometric proof doesn't prescribe one survey over the inverse for the most part. Notwithstanding, there are significant contrasts b/w the size structure, social places and quality that illuminate decision for a specific report [8].
3/[9]	QOL in CA patients receiving chemotherapy in Punjab	Singh H et al., India	2014	Total 131 cancer patients were enlisted.	Prospective, non-interventional, 4-month observational study.	Non-interventional, prospective, experimental investigation analysis.	To measures the QOL in cancer patients with EORTC QLQ-C30. Utilising this technique, the present examination evaluated the QOL in cancer growth patients experiencing chemotherapy. The present investigation shows that progress of QOL in cancer growth quiet is frequently yielded by methods for chemotherapy [9].
4/[10]	Factors affecting the QOL of cancer patients undergoing chemotherapy: A questionnaire study.	Üstündağ S and Zencirci AD, Turkey	2015	352 outpatient chemotherapy patients	Descriptive and cross-sectional study	Nightingale Symptom Assessment Scale (N-SAS) was used.	Advanced studies on singular QOL factors influencing cancer would engage medical attendants for better consideration procedures and patients for effectively defeating the disease [10].
5/[11]	Comfort and QOL of cancer patients	Kim KS and Kwon SH, Korea	2007	100 cancer patients, of which 98 were selected for study.	Cross-sectional descriptive study	Self-reporting questionnaire with the purpose of incorporated the Hospice Comfort Questionnaire and the EORTC QOL Core Questionnaire-C30 at OPD, IPD, at home, and a day-care chemotherapy centre.	The study showed lower comfort level in psycho profound and natural support than physical and social comfort in cancer growth patients. Improvement in condition and psycho otherworldly help is recommended as methodologies upgrade the solace of cancer patients [11].
6/[12]	HRQOL among cancer patients using an integrated inference system and linear regression.	Abdullah L and Low JY, Malaysia	2015	31 cancer patients.	Experimental study	Numerous direct relapses technique was utilised to demonstrate the linear connection between a reliant variable and at least one free factors.	The model shows that the variable of feeling was recognised in light of the fact that the most noteworthy hazard factor for disease patients. The usage of facilitated model, cushy construing structure and multi direct backslides was successfully perceived by the nature of the relationship between the multi components of HRQL and right now health status [12].
7/[13]	Validity of QOL questionnaire version II for cancer patients.	Vidhubala E et al., India	2011	183 cancer patients	Structured questionnaire study	QOL questionnaire version II comprised of 38 things and thus the tool was approved utilising 392 patients.	QOL may be a multidimensional thought having diverse perspectives. The Cancer Institute QOL Questionnaire variation II for disease patients is viewed as a considerable and reliable tool and conceivable to administer in the Indian oncology clinical centre [13].
8/[14]	Assessment of QOL of cancer patients in a tertiary care hospital of South India.	Gopal K et al., India	2011	32 cancer patients	Prospective study	The QOL questionnaire develop and validate by Vidhubala E, et al. with a reliability of Cronbach alpha of 0.90 and Split-half reliability of 0.74 (utilising Alpha coefficient and Guttman Split-half reliability technique)	Investigation indicated that 80% of the whole examination populace answered to have normal and beneath normal QOL, recommending that an expanding significance is given to the joining of QOL as a result, moreover to other clinical endpoints [14].
9/[15]	Hope and QOL in Hospice Patients with CA.	Brown C, South Florida (USA)	2005	31 cancer patient	Herth Hope Index (HHI) and the Hospice QOL Index (HQLI).	The instruments utilised were the Herth Hope Index (HHI) and along these lines the Hospice QOL Index (HQLI). This study inspected association among expectation and QOL in hospice patients.	The finding of this study accentuate the importance of the social insurance supplier in advancing expectation at the highest point of life, and recommend that expectation isn't expelled by induction into a hospice program [15].
10/[16]	Elements influencing QOL in cancer patients experience chemotherapy.	Heydar Nejad MS and Hassan A Iran	2011	200 cancer patients	Cross-sectional study.	EORTC QOL Questionnaire (EORTC QLQ-C30) was utilised to gauge QOL in the patients.	Basic differentiation was found between the level of QOL in patients with <2 CT cycles or possibly with 3-5 cycles. The QOL in numerous subjects (66%) was really incredible [16].
11/[17]	Factors affecting QOL with cancer patients with chemotherapy at Gena University Hospital.	Hayah A et al., Egypt	2016	205 cancer patients	EORTC QLQ-C30	With some revision, the EORTC (QOL) Questionnaire (EORTC QLQ-C30) was used.	This examination proposes that influence cancer patients to complete a chemotherapy course assumes an essential work inside the treatment result and thus the QOL in disease patients experiencing chemotherapy [17].

12/[18]	Assessment of QOL in cancer patients	Farzianpour F et al., Iran	2014	185 cases after a chemotherapy treatment meeting during in the underlying three months.	Descriptive cross-sectional study	General QOL was evaluated utilising WHO survey (WHOQOL-BREF) and specific life quality was evaluated utilising self develop questionnaire.	Genuine examination demonstrated that the regular of general life quality, explicit life quality and hard and fast ordinary was evaluated, by virtue of the average quality of general and explicit life, totally blend of the thought program of patient thought in basic social protection structure, quick access and help with mediation to overhaul the standard of life is reachable [18].
13/[19]	Changing patterns and affecting components of the QOL of chemotherapy patients with breast cancer.	Ai ZP et al., China	2017	174 breast cancer patients	Quantitative	Following scale was used: M.D. Anderson Symptom Inventory Scale, Hospital Anxiety and Depression Scale (HADS), Functional Assessment of Cancer Therapy-Breast (FACT-B) scale were utilised.	The QOL of cancer patients were the low before the postoperative chemotherapy and in this manner the most noteworthy after the second chemotherapy course. After the 4 <sup>th</sup> and 5 <sup>th</sup> chemotherapy courses, the scores were lower. The scores enhanced again after the 6 <sup>th</sup> chemotherapy course. In addition, each treatment course had clearly identifiable related reactions impacted on QOL of the patient [19].
14/[20]	QOL of cancer patients in Malaysia: A literature review	Ainuddin HA et al., Malaysia	2018	Identified 19 studies with a total of 2647 participants.	A literature review	A far reaching electronic inquiry was completed using the following databases: Science Direct, MEDLINE, Scopus, Sage, Springer, Web of Science, Clinical Key and EBSCO. Identified 19 cross-sectional studies, one prospective study, one quasi-experimental study and three randomised control trials. The review was divided into two categories, cross-sectional and prospective and experimental studies.	The most common outcome measure used by the researchers to measure the QOL was the EORTC QLQ-C30. Furthermore, sums of eight QOL measures were utilised all through this review. These incorporate Short Form Health Survey with 36 questions (SF-36), Global Health Status (GHS), Gastrointestinal Quality of Life Index (GIQLI), Hospice Quality of Life Index (HQLI), Euro Quality of Life-5 Dimensions (EQ-5D), WHO Quality of Life BREF (WHOQOL-BREF) and subsequently the Patient Generated Subjective Global Assessment (PG-SGA) [20].
15/[21]	Other-worldliness, trouble, discouragement, nervousness, and QOL in patients with advanced CA.	Kandasamy A et al., India	2011	58 patients with advanced CA from a hospice place.	Cross-sectional study.	Understanding assessed with the going with instruments: the visual simple scale for torment (VAP), M.D. Anderson side effect stock (MDASI), Hospital Anxiety Depression Scale (HADS), Functional appraisal of malignant growth treatment- Palliative Care (FACT-buddy), and Functional evaluation of ceaseless disease treatment profound prosperity (FACIT-sp).	This examination proposes that otherworldly prosperity is an essential part of the standard of lifetime of cutting edge malignancy patients, and is firmly connected with the physical and mental side effects of misery. It ought to be tended to suitably and sufficiently in palliative consideration settings [21].
16/[22]	Building up a comprehensive CA disease explicit Geriatric Assessment tool.	Rao S et al., India	2015	CA specific Geriatric Assessment tool.	Mixed method research design.	Writing on evaluation of geriatric needs in an oncology setting was audited such valid tools on explicit spaces were recognised and used. Approval of tools distinguished was Kuppuswamy scale (financial), Edmonton Symptom Assessment Scale (Physical indications).	The tool was produced for use under the geriatric palliative consideration venture of the branch of palliative consideration set up medication at Tata Memorial Hospital, Mumbai. Attainability of the instrument tried in palliative consideration set-up. In view of the prerequisites evaluation result establishment a far reaching geriatric palliative consideration extend and rethink results [22].
17/[23]	Appraisal of the responses of parental figures of a cancer patients: Validity and unwavering quality of the size of "Your responses helping your relative" in Turkish society.	Ugur O and Fadiloglu C, Turkey	2013	132 caregivers of cancer patients.	Descriptive study	Family members, twice by eye to eye talk with interview strategy. Trial of the assessment involves 132 parental figures of malignant growth tolerant patients who had outpatient treatment in chemotherapy unit of a school emergency clinic in Izmir.	Validity of the scale was directed by using Kendall's Coefficient of Concordance and it was evaluated as there's no differentiation of supposition among the masters. The scale which is found to be generous and trustworthy as outcomes of our assessment is consistently wont to review the reactions of parental figures of CA patients during the thought giving time frame in Turkish society [23].
18/[24]	Family parental figures' weight: An emergency clinic based examination in 2010 among cancer patients from Delhi.	Lukhmana S et al., India	2015	200 care givers of cancer patients	Cross-sectional Study	Samples were chosen by systematic sampling and talked with utilising standard, approved Hindi variant of Zarit Burden Interview. Univariate investigation and multivariable calculated relapse were managed utilising Statistical Package for the Social Sciences programming.	Care giver accounted for no or insignificant weight while 75 care giver detailed gentle to direct burden. Utilising strategic relapse lawful status, instruction and kind of group of care givers, control of CA patients and kind of treatment office be seen as the indicators of weight on guardians. In perspective on the considerable weight on family guardians including absence of sufficient number of disease medical clinics, there's a general well being basic to recognise this significant gathering [24].
19/[25]	Develop and Validity of a questionnaire to gauge inclinations and desires for patients experiencing palliative chemotherapy: EXPECT questionnaire.	Patil VM et al., India	2016	10 patients undergo palliative chemotherapy	Prospective observational study.	Questionnaire was structured. Patients who fulfilled the fuse and shirking criteria self-guided EXPECT survey in common language. Ensuing to filling this study, they self-coordinated rapid questionnaire-10 (QQ-10). SPSS structure 16 (IBM New York) was used for examination.	The completing pace of this questionnaire was 100%. The QQ 10 gadget certified the chance, face authenticity and utility of the study. Fruition pace of EXPECT survey was resolved. The chance, face legitimacy, utility and time taken for fulfillment of EXPECT study was assessed. It's a viable tool for getting patient's tendencies and want from chemotherapy [25].

20/[26]	Impact of strong consideration on chemotherapy patients, self-care conduct and fulfillment: A pilot study led in Karachi, Pakistan.	Salima S et al., Pakistan	2018	17 female chemotherapy patients'	Pilot study	Right now, care intercessions were advertised. Female cancer patients accepting week after week chemotherapy routine and determined to have breast or gynecological cancer was a piece of the examination. Result factors, self-care conduct and fulfillment, were surveyed by means of a self created Questionnaire.	Members announced moderate to high self care practices and fulfillment after presentation to strong consideration mediations conveyed by means of the patient assistance bunch program. Advising and psyche preoccupation exercises are compelling in making a positive change in chemotherapy patients' self-care practices and satisfaction. Future investigations ought to assess the viability of those mediations with bigger sample size and relative examination [26].
21/[27]	Evaluating symptom burden in bladder cancer: An overview of bladder cancer specific health-related QOL instruments.	Bernard Danna J et al., USA	2016	5 instruments explicit to bladder cancer.	Systematic literature review	Complete composing search of each instrument utilised in bladder cancer, giving explicit thought to the outcomes assessed. The most overwhelmingly used instruments are the EORTC-QLQ-BLM30 for muscle-intrusive disease.	There are various strong instruments for use in estimating HRQOL in bladder malignant cancer patients. Researchers have segregated these instruments into three classes which redesign their utilisation: instruments for use following NMIBC meds (EORTCQLQ-NMIBC24), instruments for use following radical cystectomy (FACT-BI-Cys and EORTC-QLQ-BLM30) [27].
22/[28]	Appraisal of QOL of cancer patients going to oncology center in a tertiary consideration clinic of Jharkhand, India.	Shalini S et al., India	2016	59 cancer patients	Self structured questionnaire	A total of 59 cancer patients were associated with the examination, of which 26 were man and 33 were females. A predominant piece of the patients 62.7% were in the age extent of 40-60 years. 76.3% of cancer patients were carrying on a beneath typical QOL.	The examination people had different types of cancer. Among females 57.6% patients were influenced by cancer Breast and among guys 34.6% of the patients were influenced by cancer lung. A huge part of the patients who went to the oncology dept. of RIMS, Ranchi during our season of concentrate had unsatisfactory QOL [28].
23/[29]	QOL in gynaecologic cancer patient attending a Tertiary Care Centre.	Ranjini N et al., India	2017	131 gynaecologic cancer patient	Interview based cross-sectional study	WHOQOL-BREF Questionnaire was utilised. The gynaecological and socio-segment information was investigated for any critical contrast in QOL scores utilising single direction ANOVA.	In clinical practice the QOL instruments could likewise be utilised with other sorts of evaluation, giving important data which will indicate areas during which an individual is generally influenced and help the specialist in settling on the least complex decisions in persistent consideration [29].
24/[30]	Factors associated with QOL among cancer patients in Sri Lanka	Dilka R et al., Sri Lanka	2018	167 of cancer patients were participated.	Descriptive cross-sectional study	Study was led at National Cancer Institute of Sri Lanka. WHOQOL-BREF questionnaire was utilised to survey QOL of cancer patients. Multivariate rectilinear relapse model was to assess the relationship of segment factors, clinical attributes, and social help status with the QOL measures.	By and large QOL score was impressively low in our investigation. Non-stop family backing and great training might improve the QOL of malignant growth patients. Psychosocial and mindfulness projects to relations and neighbours have to be actualised to strengthen the standard of lifetime of CA patients [30].
25/[31]	Depression in cancer patients experience chemotherapy in a tertiary consideration clinic: a cross-sectional investigation.	Shivani V and Sharma SK, India	2019	95 cancer patients	Cross-sectional study	Self structured questionnaire was used based on the Beck's Depression Inventory.	Among the study subjects, 70 had depression of which 15 had borderline clinical depression, 44 had moderate depression and 11 had severe depression. None of the examination subjects had outrageous gloom. Dominant part of the examination subjects getting chemotherapy was discouraged [31].
26/[32]	Development and validation of value care questionnaire - palliative consideration.	Ho YY et al., Korea	2018	220 cancer patients	Psychometric properties.	Development of the questionnaire follows the four-stage practice: thing age and decrease, construct, pilot testing, and field testing. Researcher built up a 44-item survey. To evaluate the validity and reliability and selected 220 patients more than 18 years from 3 Korean medical hospital.	Part investigation of the data and fit insights process came about inside the 4-factor, 32-thing Quality Care Questionnaire-Palliative Care (QCQ-PC), which spreads fitting correspondence with human services experts (10 things), talking about estimation of life and objectives of care (nine things), backing and advising for requirements of comprehensive consideration (seven things), and availability and manageability of care (six things). This investigation exhibits that the QCQ-PC are regularly received to evaluate the standard cancer patient [32].
27/[33]	A critical review of instruments measuring the QOL of cancer patients.	Hasanvand S et al., Iran	2019	159 reviews were included.	Critical Review and Psychometrics Properties.	Right now, articles distributed in Iranian databases (IranMedex, Irandoc Magiran, SID). An absolute articles were acquired, of which 33 articles consented to the consideration criteria of investigation and in this way were assessed. 69% of the articles investigated the existence nature of grown-up females with breast cancer, and the most-ordinarily utilised tool was a QOL for use in worldwide clinical preliminaries in oncology having a place with EORTC.	The greater part the examinations alluded exclusively to Iranian investigations to manage psychometric properties. As indicated by the discoveries, the investigations which investigated the validity and reliability of instruments relating to the existence nature of malignant growth patients be rare. Along these lines, the scientists should give further consideration to the legitimacy and unwavering quality of instruments for determination of a proper instrument during this region of research [33].

28/[34]	Validation of the EORTC QLQ-ELD14 questionnaire for measurement of HRQOL older patients with cancer.	Wheelwright S et al., UK	2013	518 older CA patient	Prospective multi-centre cohort study	QLQ-C30, QLQ-ELD was utilised. Data from the questioning meeting, connection investigation and thing reaction hypothesis examination came about inside the evacuation of 1 thing (QLQ-ELD15-QLQ-ELD14) and amendment of the proposed scale structure to 5 scales (portability, stresses over others, future stresses, keeping up reason and ailment weight) and two single things (joint firmness and family support).	The QLQ-ELD14 might be an approved HRQOL survey for disease patients. Changes in old Patients' self-announced HRQOL could likewise be associated with together disease development and non-clinical occasions [34].
29/[35]	Validation of QOL questionnaire for patients with cancer- Indian scenario	Vidhubala E et al., India	2005	Tests contain 400 patients with all locales and phases of cancer.	Validation of QOL questionnaire	38 things were pooled from existing tool, audits, and in this manner the field preliminary, by which face and factorial validity were conducted.	Dependability of the instrument was likewise tried. Connection examination was done to search out the connection between the spaces of QOL. The device was found exceptionally dependable and legitimate. It was possible to oversee in clinical setting [35].
30/[36]	An assessment of reliability and validity of the EORTC QOL Questionnaire C30 among breast cancer patients in Qatar.	Bener A et al., Qatar	2017	678 breast cancer patients	Cross-sectional hospital based study	EORTC QLQ-C30 tool used in Arabic version.	Qatari Arabic form of the EORTC QLQ-C30 indicated worthy psychometric properties, which may be a reliable and valid instrument which will be used by oncologists [36].
31/[37]	Assessment of psychometric properties of requirements evaluation tool in cancer patients: A methodical literature review.	Tian L et al., China	2019	37 studies which assessed the psychometric properties.	Systematic literature review	Search were led in the electronic databases of PUBMED, CINAHL, EMBASE, and PsychINFO just as extra sources. The nature of psychometric properties of the enlisted needs appraisal devices was assessed utilising the concurred quality criteria for estimation properties of health status questionnaires.	Electronic databases have recognised 27,739 potential applicable articles fundamentally. After the writing screening strategy, 37 studies which have assessed the psychometric properties of 20 needs evaluation devices in cancer patients were distinguished inside the synopsis of proof. Regardless of a few needs appraisal devices exist to survey care needs in cancer patients, further improvement of previously existing and promising instruments is recommended [37].
32/[38]	An orderly audit of psychometric properties of wellbeing related QOL and side effect instruments in grown-up intense leukaemia survivors.	Bryant AL et al., USA	2016	Review identified a total of seven instruments.	Systematic literature review	Look at psychometric properties of side effect and HRQOL instruments. Efficient writing search was directed utilising electronic databases and manual quests.	The most generally utilised instrument was the (EORTC QLQ-C30), trailed by the Functional Assessment of Cancer Therapy-Fatigue (FACT-F). Acute leukaemia analyse significantly affect HRQOL. Our proposals incorporate utilising both a HRQOL and side effect instrument to catch quiet encounters during and after treatment [38].
33/[39]	Improvement and validation of a multidisciplinary mobile care system for patients with advanced gastrointestinal cancer: Interventional observation study.	Soh JY et al., Korea	2018	203 cancer patients	Interventional Observation Study	The application was created to accomplish three significant clinical objectives: support for QOL, nourishment, and rehabilitation. In the App, first, the administration extension was set up, and the estimation apparatuses were institutionalised. Second, the administration stream of the versatile consideration framework was composed. Third, the mobile application (Life Manager) was created.	For assessment, 203 patients were selected for the investigation. Overall, 176 subject completed the study. A planned report was performed for its assessment, which demonstrated generally speaking positive fulfillment [39].
34/[40]	A precise survey of the utilisation and approval of HRQOL instruments in more seasoned cancer patients.	Fitzsimmons D et al., UK	2009	31 studies revealed the utilisation of HRQOL measures in more seasoned individuals.	Systematic review	An orderly audit of five databases and three research registers perceived examinations uncovering the utilisation and endorsement of HRQOL instruments in risk patients created more than 65 years from 1995 to mid 2007.	Utilising a scope of conventional and sickness explicit instruments. All studies showed methodological impediments. 14 studies were related to variable proof on the psychometric properties and clinical convenience of distinguished instruments. Survey recognised that the occasion, approval and utilisation of HRQOL instruments regularly overlook the exact needs of more seasoned individuals. This audit features the requirement for a HRQOL instrument explicitly intended to catch the issues and concerns generally applicable to more seasoned malignant growth patients [40].

35/[41]	Psychometric validation of the EORTC QLQ-PAN26 pancreatic cancer module for assessing HRQOL after pancreatic resection.	Eaton AA et al., New York (USA)	2017	300 pancreatic cancer patient	Psychometric validation study	The EORTC core tools and pancreatic cancer module was managed preoperatively and 14 and 60 days post operatively. Multi-characteristic scaling examination was performed; build legitimacy and inner consistency was evaluated.	PAN26 scales had satisfactory inside consistency and things were more associated with their own scale than different scales, showing fitting collection. PAN26 and C30 torment scales were profoundly related. PAN26 to identify clinically important contrasts in QOL [41].
36/[42]	Psychometric properties and execution of existing self-adequacy instruments in disease populaces: an orderly survey.	Huang FF et al., China	2018	15 Cancer related self-viability instruments were distinguished.	A systematic review	A purposeful online database search was driven in PubMed, Ovid (PsycINFO), EBSCO, Elsevier, Scopus to spot self-viability evaluation instruments for CA patients.	15 out of 6 studies were task-explicit, concentrating on cancer-related medical problems. Six instruments were explicit for cancer, or propelled cancer. The limitation found in the endorsement structures was that some huge properties of instruments (for example test-retest unwavering quality, paradigm legitimacy, responsiveness, decipher capacity, possibility, and agreeableness) weren't assessed. This audit outlines the limitations and qualities of current self-viability instruments for malignant growth tolerant [42].
37/[43]	Estimating HRQOL in cervical CA patients: A systematic review of the most utilised surveys and their validity.	Tax C et al., Netherland	2017	156 studies included (20,690 patients)	A systematic review	An efficient electronic database search was led in Pubmed, EMBASE and PsycINFO. Approval of HRQOL instruments were recovered and evaluated on psychometric properties utilising the COSMIN check list.	156 study (20, 690 patients) and recognised 31 HRQOL devices. The EORTC QLQ-CX24 (35 study; 5,556 patients) and FACT-Cx (22 investigations; 4,224 patients) were the sole cervical cancer explicit tools. Cervical disease explicit HRQOL instruments ought to in this manner consistently be used related to approved non-exclusive malignancy HRQOL devices until legitimate legitimacy has been demonstrated, or a progressively substantial apparatus has been created [43].
38/[44]	Patient-reported symptoms and quality of life integrated into clinical cancer care	Berry DL, Boston, US	2011	110 patients	Symptoms and quality of life SQL self-report study	Literature retrieved through the PUBMED and CINAHL database. Understanding detailed symptom and quality of life data can be electronically gathered and all the while made accessible for home and clinical use through the use of Web-based projects	Evaluating and joining patient inclinations, connecting with the patient in self-report, and stretching out the communication to the spot and time supported by the patient are important to carry significance to the expression "patient-centered." There is starting proof that these methodologies can have any kind of effect, improving consideration quality [44].

**[Table/Fig-2]:** Summary of characteristics of all included studies in review (n=38) [7-44].

As indicated by past studies, most studies had flaws in announcing validity and reliability properties and gave inadequate data during this respect [46]. Therefore, this study planned for checking on the instruments or tools that assess the existence QOL among chemotherapy patient.

The finding of the results showed that the EORTC QLQ C-30, (WHOQOL-BREF), FACT G, HRQOL, instrument was the most generally utilised tool in most of research studies. A few examinations utilised general instruments (for example SF-36, HRQOL) and a couple of other utilised explicit instruments as per the kind of illness (for example breast, colorectal, cervical, and gastric cancers). As indicated by 38 studies, out of 14 investigations utilised the EORTC QLQ C-30 survey, 4 studies used the HRQOL tool, 4 studies used WHO BREF tool, 12 studies used self administered questionnaire, 4 studies used other method like face to face validity (FACT) etc. In the review article studied the QOL instruments utilised in the old patients with cancer. To explain these findings, it is often mentioned that the instruments measuring the life quality comprise general and specific questionnaires. General instruments that explore the standard of life are often applicable to unwell and well individuals.

Assessing the QOL among the chemotherapy patient helps to identify their unmet needs and focus on the determinants those healthcare providers and policy improve the QOL and health outcomes in Indian scenario.

### Limitation(s)

Literatures/studies which were not found in online database they

were excluded in study. The second limitation was that many were without clarity of result those were excluded. Only the QOL bases studies are included. Third limitation was chemotherapy patient age above 30 years those studies were included.

### CONCLUSION(S)

Taking everything into account a variety of instruments has been used by the researcher so far that investigates QOL in cancer patients. Given the significance of psychometric properties of the instruments and its effect on the discoveries rising up out of various examinations, it appears to be essential that more consideration be paid to the validity and reliability of instruments before leading the exploration contemplates. Additionally, it ought to be accentuated that the use of valid and reliable instruments can expand the quality of studies and their yields. In this manner, it is suggested that the analysts contribute enough regard for the choice of standard instruments and organise the instruments' validity and reliability in their future inquires.

Given the importance of assessing the QOL beside chemotherapy patients and as demonstrated by the revelations of the current examination, proper intercessions can be arranged and actualised to improve the QOL of patients in a few perspectives. Also, it is prescribed that the instruments with perfect psychometrics which are acceptable with the socio-social setting of our country be grouped by the sort of disease. Knowledge gained from this study could be useful for in-depth of existing tools and instruments used in to assess the quality of life tool in chemotherapy patients.

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